

SiPM Testing Plan

- Pre-production testing
 - 1700 SiPMs in 13x13 trays (end of Sept./start of Oct.)
 - Vop +/- 1.5% and dark current for a fixed gain
 - Will answer many unknowns for production testing
- Full production testing
 - Tests
 - Equipment
 - Workforce
 - Tracking
 - Timeline

Tests/Equipment/Workforce

- Operating voltage and dark current for ~120k SiPMs
 - ▣ Hamamatsu will provide V_{op} and dark current for 3% of the SiPMs
 - ▣ 97% will have V_{op} within $\pm 1V$ (or $.5V?$) (sufficient for grouping?)
- Testing module(s) from Debrecen
 - ▣ Current prototype is automated and holds 4 SiPMs, but can be scaled to our choice (64, 169?)
 - ▣ $\frac{1}{2}$ hour/SiPM, but 64 or 169 won't take much longer
 - ▣ Cost?
- Workforce
 - ▣ Michigan (Augustana and Abilene have expressed interest)
 - ▣ Tracking SiPMs for board assembly will be majority of labor

SiPM Tracking

1, Position No. in each tray

TrayNo. xx												
1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49	50	51	52
53	54	55	56	57	58	59	60	61	62	63	64	65
66	67	68	69	70	71	72	73	74	75	76	77	78
79	80	81	82	83	84	85	86	87	88	89	90	91
92	93	94	95	96	97	98	99	100	101	102	103	104
105	106	107	108	109	110	111	112	113	114	115	116	117
118	119	120	121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140	141	142	143
144	145	146	147	148	149	150	151	152	153	154	155	156
157	158	159	160	161	162	163	164	165	166	167	168	169

C transfer plane



2, Data in each tray

Type No.	S13360-8050PE			
Shipping date	12/28/2016			
TrayNo.	25			
Tray No.	Position No.	Serial No.	Vop[V] Vop = Vbr + 3V	Id[μ A]
1	1	63787	54.43	0.149
	2	63788	54.37	0.161
	3	63789	54.5	0.148
	4	63790	54.59	0.139
	5	63791	55.39	0.136
	6	63792	55.25	0.136
	7	63793	55.1	0.143
	8	63794	54.93	0.144
	9	63795	54.71	0.147
	10	63796	54.7	0.14
	11	63797	54.82	0.136
	12	63798	55.28	0.171
	13	63799	55.23	0.164
	14	63800	55.21	0.142
	15	63801	55.29	0.139
	16	63802	55.22	0.141
	17	63803	55.25	0.144
	18	63804	55.32	0.133
	19	63805	55.43	0.146
	20	63806	55.55	0.15
	21	63807	54.7	0.154
	22	63808	54.29	0.14
	23	63809	54.45	0.149
	24	63810	54.34	0.148
	25	63811	54.37	0.147
	26	63812	54.42	0.138
	27	63813	54.47	0.147
	28	63814	54.47	0.148
	29	63816	54.45	0.148
	30	63817	54.35	0.151
	31	63818	54.32	0.152
	32	63819	54.39	0.144
	33	63821	54.78	0.14
	34	63822	55.13	0.14
	35	63823	55.04	0.134
	36	63824	54.91	0.145
	37	63826	54.59	0.139
	38	63827	54.58	0.147
	39	63828	55.55	0.15
	40	63829	55.55	0.147
	41	63830	55.42	0.151

- Proposed packaging from Hamamatsu
- After testing, group by Vop and transfer in similar fashion for board assembly

Timeline

- Production purchase order comes up to 6 months after November CD-1 review
- Testing likely begins summer 2018
- 10k SiPMs delivered every 6 weeks
 - ▣ Test at least 333 SiPMs/day
(8 hours/day, 5 days/week)
- 72 weeks required to test 120k devices (~end of 2019)